

ABSTRACT

Technical Presentation for the Third International Symposium on
Magnetic Suspension Technology

INTERACTION FORCES BETWEEN MULTIPLE BODIES IN A MAGNETIC FIELD

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Interaction force effects between a single body and a primary magnetic field was discussed by the author in a previous paper* presented at the First International Symposium on Magnetic Suspension (Hampton, Virginia, August 19-23, 1991).

Some of the research results collected to determine the interaction forces between multiple bodies in a magnetic field will be presented in this new paper.

It will be shown how the force values and the force directions depend on the configuration of the bodies, their relative positions to each other, and the vector of the primary magnetic field. Also to be shown will be the force effects from other bodies and the influence of various magnetic field parameters.

A number of efficient new automatic loading and assembly machines have been created based on the resulting relationship between bodies and magnetic fields. A few of these patented magnetic devices will be illustrated. The concepts involved open a new way as to how to design universal grippers for robots and other kinds of mechanisms for the manipulation of objects.

Because the magnetic force to a given object (a part or a tool) can be created without contact by remote control, the magnetic force interactions can be extremely useful in space and in robotic applications.

* Manipulation and Identification of Objects by Magnetic Forces
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